

## Operation Outline for ST 1

ST 1 is a metal tank that is 20 feet tall and 12 feet in diameter. The floor of the tank is slightly sloped to the center where the tank drain to the valve is located. The tank currently contains approximately 1500 gallons of an acid sludge consisting of a black organic sludge, a light green (acidic) crystal and a strong liquid acid. The majority of the liquid has been previously removed to totes from the tank through a valve on the tank. Additional liquids were removed from the tank by opening the manway and allowing the residual liquids drain into a modified tote. A double diaphragm pump was used to remove the liquids through the valve and from the modified tote into final containers (totes) for disposal.

Step 1: Remove residual liquids from the tank by way of the manway and pumping those liquids into final disposal containers (totes or drums);

Step 2: Remove sludge from tank.

- a. The primary plan is to remove the sludge (without entering the tank) via shovels, rakes, and other appropriate and extended reach equipment into modified totes and slurried and pumped into drums via double diaphragm pump and/or shovel the material into drums. This plan will concentrate on removing the sludge from a quadrant of the tank to allow entry without standing in the sludge should the secondary plan be needed (as described below);
- b. The secondary plan will be initiated should the primary plan prove to be inadequate. This plan will involve entry into the tank to remove the remaining materials from the tank. SWSES will comply with confined space entry requirement. The removal of the materials will be conducted using shovels, rakes, and other appropriate and extended reach equipment into modified totes and slurry and pump into drums via double diaphragm pump and/or shovel the material into drums.
  - a. The team has removed sludge successfully from other tanks without having to create a secondary access point but should one be necessary to aid in the removal of the material the plan is to create that access point using a pneumatic nibbler.

An alternate access point created by the pneumatic nibbler will consist of the creation of an opening of 4 feet by 4 feet into the tank. An entry hole will be cut into the tank with a drill. The nibbler will cut out the door leaving tabs, so the door is still attached. Additional holes will be drilled and cut in the door plate so it can be held with the overreach forklift. The door way will be tabbed. When the final tabs are cut out the door will be removed using the forklift. The jagged edges will need to be covered with foam or pipe. The same procedure will be utilized from this door sheet to remove the black sludge

The sludge will be pulled to the modified totes and slurried and pumped into drums via double diaphragm pump and/or shovel the material into drums. Drums will be placed inside the containment with the overhead lift. The drum will be labeled and placed on pallets and removed from the area. If the drums cannot be moved on pallets a drum lifter will be utilized. After removal of the solids ST 1 will be rinsed.

If the material cannot be removed from the two entry ways, a confined space entry will be required to remove the remaining sludge or crystalline material. Additional supplies and personnel will be required. Staffing will include the two entrants, a hole watch, two rescue, and a hole watch supervisor. Two crew members will be needed to slurry or package the material, as it is pushed to the entry doors. A pump operator and decontamination assistant will be needed.

The additional equipment will include some type of decontamination showers to rapidly decontaminate entrant personnel if necessary due to a torn suit or broken seal. Chemical boots will be required.